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ABSTRACT

The Internet has tremendous potential for K-12 education. However, learning how to exploit that potential remains an important problem. This paper uses ideas from situated learning and the deschooling movement to address the argument that there has been no significant reform (technology-based or otherwise) of public education for over a century. A preliminary educational model, focusing attention on the need for engagement with authenticity, is presented. The notion of authentic collaborative learning is introduced, and a number of requirements that are desirable in a technological system to support such learning are suggested. Contains 13 references. (AEF)

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ED 429 532

Virtually Deschooling Society: Authentic Collaborative Learning via the Internet

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Abstract: The Internet has tremendous potential for K-12 education. However, learning how to exploit that potential remains an important problem. In this paper, we use ideas from situated learning and the deschooling movement to address the argument that there has been no significant reform (technology-based or otherwise) of public education for over a century. We present a preliminary educational model focusing attention on the need for engagement with authenticity. We introduce the notion of authentic collaborative learning, and suggest a number of requirements that are desirable in a technological system to support such learning.

Introduction

In this paper, we consider the use of the Internet in K-12 education. Our discussion, at this stage, is primarily theoretical; we are concerned that the educational potential of the Internet is being narrowly defined by technology-driven research based on limited and inappropriate educational models. Our principal interest is in supporting meaningful learning experiences, and we believe the Internet can make a significant contribution toward this goal. We do not want to see the Internet go the way of previous technologies that have promised to positively impact education but have delivered little. It is not sufficient to state, "It will be different this time;" we must demonstrate that it is different and optimize the educational benefits of the difference. We present a preliminary model which focuses attention on the areas in which we believe the Internet can have a positive influence on education.

We are members of a large interdisciplinary project group from Virginia Tech and the Montgomery County Public Schools, supported by a major award from the U. S. National Science Foundation. The Learning in Networked Communities (LiNC) project seeks to exploit the high network bandwidth and availability brought to the County by the Blacksburg Electronic Village (BEV) [Carroll and Rosson 1996] to explore the potential educational uses of a virtual physics laboratory to support collaborative, project-based learning. An important element of the project is to facilitate broad community involvement in education - this is the particular area we want to consider. The views expressed in this paper are our personal views and not those of the project or its participants.

We do not use the terms "learning," "education," and "schooling" interchangeably. We consider their meanings to be quite distinct and these distinctions are important to our discussion.

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Is Educational Reform Possible?

"I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks." - *Thomas Alva Edison*

When a new technology emerges, prominent people tend to rush in to make exaggerated claims about the way that technology will transform education. Such claims can be found for radio, television, computers and now the Internet, in addition to other non-technological educational "breakthroughs." Tyack and Cuban, in their book *Tinkering Toward Utopia* [Tyack and Cuban 1995], present a convincing thesis that for over a century, in the face of a barrage of educational reforms (technological and otherwise), the form and substance of the public education system has remained remarkably stable: "Over long periods of time schools have remained basically similar in their core operation, so much so that these regularities have imprinted themselves on students, educators, and the public as the essential features of a 'real school'." (p. 7)

Tyack and Cuban use historical evidence and case studies to show how it is school that changes reforms rather than reforms that change school. We believe that their argument is an important challenge for all those concerned with the use of the Internet in education. On the whole, technological artifacts play only a small part in education. Educational technology has derived much of its importance from its promise to be able to change education and to provide new opportunities to redress traditional imbalances. This is the promise of the Internet. But it is not sufficient to add another Edison-like statement to the history books, with the proviso that it will be different this time. We need to understand if and why it will be different this time and to focus our research on the issues that are most likely to hold the key to significant educational advances.

Situated Learning

Humans are expert learners. The basic ability to learn has played a significant part in human evolution. We often learn effortlessly without being particularly conscious of what we are doing. Problems develop, however, when we try to control and measure what is being learned. Jean Lave [Lave 1993] reminds us that: "Learning is an integral aspect of activity in and with the world at all times. That learning occurs is not problematic. What is learned is always complexly problematic." (p. 8) A situated approach to learning [Lave and Wenger 1991] focuses on learners and learning. As Seely-Brown and Duguid [Brown & Duguid 1993] point out, "A situated approach contests the assumption that learning is a response to teaching." Learning is embedded in multiple and overlapping social and material situations. These situations are not just a neutral "background" they provide the contextual scaffolding which affords motivation, interpretation, understanding, and so on.

For those that see learning as a fundamentally situated experience, the Tyack and Cuban thesis is strangely reassuring. From a situated learning perspective, the dominant and most enduring experience taking place in schools is "schooling." That is, students learn how to do school: how to pass a test, get a good grade or maybe just survive. In spite of all the fine efforts of teachers to present a systematic and relevant curriculum in stimulating and meaningful ways, it is the game itself that gets into the blood.

One could be encouraged that schools are so successful at teaching schooling. They have a major impact on students' learning - isn't that what they are supposed to do? Unfortunately, evidence suggests that the kind of learning developed and rewarded in schools is very different from the kind of learning that is used and valued outside of school. Lauren Resnick [Resnick 1987] suggests that there are four broad characteristics of mental activity used outside of school that stand in marked contrast to mental activities developed in schools:

1. Individual cognition in school versus shared cognition outside school.
2. Pure mentation in school versus tool manipulation outside school.

3. Symbol manipulation in school versus contextualized reasoning outside school.
4. Generalized learning in school versus situation-specific competencies outside school.

The essential social and material situations of the school have not changed for over a century. Typical standard and universal features of schooling include: age-grading, one teacher per self-contained classroom, full-time attendance, the division of knowledge into subjects, and regular assessment. If we really want to have an influence on educational achievements and, more importantly, on underachievements, we have to do more than just change the curriculum or the medium of delivery. We need to change the fundamental organization of education. We need to break out of the classroom.

Learning Without Schools

If it is schooling that is principally learned in schools, can people be educated without schools? Can we break out of the "school game" and play another game with different rules? Goodman [Goodman 1971] described schooling as a "mass superstition" which nobody opposes and for which nobody proposes alternatives. There have been one or two educational models suggested, however, that are not based on the school. Here we consider the radical educational models proposed by the "deschooling movement" and in particular Ivan Illich [Illich 1973] (see also [Goodman 1971]).

Illich proposed *Learning Webs* as an alternative to schools. He set out to outline the kind of resources required if one considered not what people ought to learn, but instead what kinds of things and people learners might need to be in contact with. He identified four kinds of learning resources: *Things* (educational objects), *Models* (skilled people), *Peers* (other learners), and *Elders* (educators-at-large). Illich also suggested that technology could be harnessed to provide a reference service for these resources.

The great value of Illich's ideas is that he has dared to consider what education might be like without schools. On the other hand, the great weakness of Illich's ideas is that they are difficult to operationalize. It is hard to see how Learning Webs would ever replace the school system. One problem with proposing radical alternatives to schools is that schools have non-educational uses which are very important and have to be considered. Paul Goodman [Goodman 1971] rather cynically describes some of these non-education uses: "In the tender grades, the schools are a baby-sitting service during a period of collapse of the old-style family and during a time of extreme urbanization and urban mobility. In the junior and senior high school grades, they are an arm of the police, providing cops and concentration camps paid for in the budget under the heading of 'Board of Education'." (p. 21) Cynicism aside, schools obviously play a central role in our culture.

School systems also represent massive vested interests. They are a substantive part of most of our socio-political and economic structures. It seems ridiculous to propose that we suddenly close the doors to hundreds of thousands of institutions and the people who bring them to life, or to imply that there is any way that we can make a transition to a different way of education without massive upheaval. Although we think Illich's Learning Webs have some value in the context of development of educational resources via the Internet, on this occasion we want to borrow Illich's general notion of deschooling to be carried forward in our argument. For Illich, and for us, deschooling society means far more than just getting rid of the schools; it also means overcoming the schooling mentality throughout the whole of society.

The Educational Potential of the Internet

We believe that if we want the Internet to have a major impact on improving education, the learning involved has to be active and collaborative; but above all, we have to move beyond exclusively school-based conceptions of learning. It will be a significant waste of effort and resources if Internet-based projects only succeed in reifying existing school-based practices or merely "computerizing" limited and simplistic educational models. Indeed, the combination of complex technological models with simple

(often tacit) educational models appears to be the best way to negate the educational potential of the Internet (or any other technology). What we need are clear and far-sighted educational models that lay the foundations for a radical and parallel development of learning *and* technology.
There are, of course, limits. We are not suggesting that all learning can be supported by the Internet, or that learning should take place strictly outside the classroom. There are certainly many activities that are best developed in some kind of school setting. The idea we want to emphasize is that the Internet may be a technology uniquely suitable for carrying forward a meaningful integration of learning and community.

An Educational Model

Here we present a preliminary model designed to focus our attention on the "higher" levels of educational activity afforded by the Internet. We consider our model to be cumulative with no clear and absolute boundaries between the different levels - clearly one level merges into the next. We believe such a model to be useful primarily because it draws attention to the third level: the idea of engagement with authenticity. It also cuts across traditional technological boundaries. It is possible to find both simple and advanced examples of technology at each level of the model.

Level 1 - *Engagement with Information.* One of the great values of the Internet, and in particular the World Wide Web, is that it brings the learner face to face (via a fairly standard interface) with an ever expanding universe of digital information. Here the dominant metaphor is the digital library.

Level 2 - *Engagement with Simulation.* Some aspects of the "real world" can never be experienced in a direct sense. Simulation can be of immense educational value in these cases. As collaborative learning can be useful during simulation, it is possible to support collaborative simulation through MUD's (Multi-User Domains) and MOO's (MUD Object-Oriented). Here the dominant metaphor becomes the virtual school or for example, the virtual science lab.

Level 3 - *Engagement with Authenticity.* This is the level which we think is of major significance, particularly in terms of its potential contribution to educational development. It is difficult to think about this area, however, because school has so dominated our educational concepts that it is hard to even find a language in which to discuss the issues. As Illich [Illich 1973] pointed out, "education becomes unworldly and the world becomes non-educational." (p.31)

What we want to facilitate is "virtual access to reality." We consider that the rather ill-defined and somewhat contrived term *authenticity* (meaning authentic activities in authentic contexts) has some value as a general pointer into the issues we need to consider.

Authenticity

Seely Brown, Collins and Duguid [Brown et al. 1989] offer the following definition of authenticity: "The activities of a domain are framed by its culture. Their meaning and purpose are socially constructed through negotiations among present and past members. Activities thus cohere in a way that is, in theory, if not always in practice, accessible to members who move within the social framework. These coherent, meaningful, and purposeful activities are authentic, according to the definition of the term we use here. Authentic activities then, are most simply defined as the ordinary practices of the culture." (p. 34) In an educational context, we use the term *authentic* to refer to activities that, in some way, reach outside of the school community and culture.

Seely Brown, Collins and Duguid's account of authentic activities is fairly representative of the descriptions found in the situated learning literature. An important contribution to the emergence of the situated learning perspective has been the detailed study of learning in traditional or well-established cultures, such as Lave's studies of tailoring in West Africa [Lave and Wenger 1991] or Hutchins' studies of maritime navigation, both traditional [Hutchins 1983] and modern [Hutchins 1993]. Because of these

and similar studies, apprenticeship models of learning have received the bulk of the research attention. However, another model of social learning that has received rather less attention is the self-help or mutual aid group, or "collaborative bootstrapping" as we once termed it [Eales & Welsh 1995]. This model is essentially peer-based and, although different members may play different roles and develop different skills, it has very few of the disparities of knowledge and skill associated with the apprenticeship model. In the mutual aid model, it is the motivation to solve a common problem that provides the focus of group activities. One could argue that it is the problem that is authentic rather than some enduring culture. We suggest that this is a far more appropriate social model of learning for use in education and can provide a valuable starting point for the exploration of community-related education via the Internet. We will refer to this kind of learning as *authentic collaborative learning*. This kind of learning would appear to be universal, although it is not often seen in formal education. The author found similar collaborative learning in the face of a common problem amongst administrative computer users in a large Australian university [Eales 1996].

Authentic collaborative learning (via the Internet) will require a certain amount of effort to set up as an educational activity. Educators will have to negotiate access to authentic problems and projects. In particular, interaction with representatives of the wider community is a vital part of the authenticity. Some examples of this interaction, which could be supported by the Internet, include:
with clients - for example, students could negotiate with members of a local community group to create web pages for them.
with advisors - for example, students could seek advice from scientists on the best way to monitor local environmental conditions.
with critics or reviewers - for example, local people could offer their comments on a student created multi-media history of the local community.

Technological Support of Authentic Collaborative Learning

Authentic collaborative learning can and should be supported by technology. At present such activities are usually supported on the Internet by a mixture of e-mail software, web browsers, ftp, word processors, etc. What we require is a simple, robust and integrated tool to support all aspects of authentic collaborative learning. In very simple terms, some of the most important requirements for such a tool are:

The system should be content-free, although certain kinds of uses may require special methods of capturing and manipulating representations.

All significant operations of the system should be under the control of the participants.

There should be support for ongoing, group-based, interactive discourse (usually asynchronous but sometimes synchronous).

Methods of representation should be appropriate for dealing with the problem but should not require complex skills from the participants (maximal representational value with minimal user effort).

There should be sufficient media richness to encourage group cohesiveness.

Adequate privacy and confidence in the security of group boundaries is required.

Simple and efficient methods of archiving and organizing representations within the group need to be provided.

(For a more detailed analysis, see [Eales 1996])

Conclusions

We have argued that the Internet has a tremendous educational potential but history suggests that this potential will not be realized. Instead of focusing on school-based models of education, the Internet can allow learners to break through the walls of the classroom and engage with authentic activities in authentic contexts. We believe that this approach offers the best opportunity for the Internet to have a significant impact on educational practices and achievements. We have termed this type of activity

authentic collaborative learning and have suggested the importance of self-help style group organization focused on authentic problems. Although such learning can be supported by existing Internet-based applications, we have outlined requirements for a system for specifically supporting authentic collaborative learning.

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